CLAIMS

1. A transmission apparatus comprising:

a master station transmitting video or audio by utilizing a minute-power wave;

a slave station transmitting video or audio by utilizing a minute-power wave; and

a relay station placed between the master station and the slave station which are placed apart from each other by a distance longer than the reachable range of the minute-power wave;

wherein a transmission signal from the master station includes, in addition to original information such as video or audio, information indicating the address of the slave station, and information indicating a frequency at which the self-station receives a signal from the relay station;

said relay station modulates the frequency of the minute-power wave received from the master station to a different frequency and outputs it;

said relay station transmits information about a frequency at which the self-station receives a signal from the slave station; and

when the slave station recognizes that the transmission signal is a signal directed to the self-station, it modulates the minute-power wave to the frequency specified by the relay station and transmits the video or audio, thereby establishing a

transmission path between the master station and the slave station.

2. A transmission apparatus as described in Claim 1 wherein:

a standard television signal is used as the transmission signal in the forward path from the master station to the slave station; and

a PCM audio signal and the information indicating the address of the slave station and the reception frequency specified by the self-station are superposed on a video signal during the vertical blanking period of the video signal.

3. A transmission apparatus comprising:

a transmitter having an RF converter which generates a standard television signal;

a receiver having an RF tuner which receives the standard television signal;

available frequency detection means for detecting frequencies which can be used for video transmission, within the reception band of the RF tuner, in advance of use;

detected frequency registration means for registering the detected frequencies, as a communication frequency list, in both of the transmitter and the receiver; and

spread spectrum communication means for spreading the power spectrum by changing the frequency within the range of the

communication frequency list, and performing spread spectrum communication.

4. A transmission apparatus as described in Claim 3 further comprising transmission power control means for automatically changing the transmission power during the communication in accordance with the use frequency band width so as to keep the power density per unit band width constant.

5. A transmission apparatus as described in Claim 3 ~~or 4~~ further comprising frequency changing means for changing the frequency during the communication, in synchronization with the synchronous timing of the video signal.

6. A transmission apparatus as described in ~~any of~~ Claims 3 ~~to 5~~ further comprising control signal superposition and transmission means for transmitting a control signal by superposing it on the video signal in the blanking period, during the communication.

7. A transmission apparatus as described in ~~any of~~ Claims 3 ~~to 6~~ further comprising audio signal superposition and transmission means for subjecting an audio signal to PCM, and transmitting the PCM audio signal by superposing it on the video signal in the blanking period, during the communication.

8. A transmission apparatus comprising:

first and second transmission/reception apparatuses each comprising a transmission apparatus described in ~~any of~~ Claims 3 ~~to 7~~;

frequency changing order control means for controlling the frequency changing order, during the communication, in such a manner that the frequency is changed in one direction, from the higher frequency to the lower frequency or from the lower frequency to the higher frequency, within the range of the communication frequency list, and when the frequency reaches the end of the frequency list, it is returned to the beginning of the frequency list; and

communication control means for controlling the first and second transmission/reception apparatuses to realize duplex communication, by using a frequency time table in which the first and second transmission/reception apparatuses always use different frequencies.

9. A transmission apparatus as described in Claim 8 further comprising communication frequency list updation means which uses the previously registered communication frequency list when stating the communication, and uses a second communication frequency list obtained by duplicating the registered communication frequency list after the communication has been started, and updates the second communication frequency list as

desired by exchanging the result of communication, i.e., whether it is good or bad, between the first and second transmission/reception apparatuses.

10. A transmission apparatus as described in ~~any of~~ Claim~~s~~ 3 ~~to~~ ~~9~~ further comprising:

ID storage means for storing an identification number (hereinafter referred to as an ID) which is given to the transmission apparatus during manufacture; and

ID inquiry and registration means for performing mutual inquiry of IDs with another transmission apparatus which is permitted to have communication in advance of use, and registering the ID.

11. A transmission apparatus as described in Claim 10 further comprising:

frequency setting means which always executes the reception mode in advance of the transmission mode to detect the frequency time tables of all other transmission apparatuses which are performing transmission within the same wave area, and performs transmission by using a frequency time table the use frequency of which is always different from those of these other transmission apparatuses; and

retransmission means for performing retransmission by using a frequency time table different from said frequency time table

when a transmission signal from another apparatus which has requested communication cannot be detected even when a predetermined period of time has passed after starting the transmission mode.

12. A transmission apparatus as described in Claim 10 ~~or 11~~ further comprising output stop means for stopping output of the original information such as audio or video, when the ID which is permitted to have communication cannot be confirmed in the reception mode.

13. A transmission method for mutually transmitting video or audio between a master station and a slave station by utilizing a minute-power wave, wherein:

a relay station is placed between the master station and the slave station which are placed apart from each other by a distance longer than the reachable range of the minute-power wave;

a transmission signal from the master station includes, in addition to original information such as video or audio, information indicating the address of the slave station, and information indicating a frequency at which the self-station receives a signal from the relay station;

said relay station modulates the frequency of the minute-power wave received from the master station to a different

frequency and outputs it;

said relay station transmits information about a frequency at which the self-station receives a signal from the slave station; and

when the slave station recognizes that the transmission signal is a signal directed to the self-station, it modulates the minute-power wave to the frequency specified by the relay station and transmits the video or audio, thereby establishing a transmission path between the master station and the slave station.

14. A transmission method as described in Claim 13 wherein:

a standard television signal is used as the transmission signal in the forward path from the master station to the slave station; and

a PCM audio signal and the information indicating the destination station and the reception frequency specified by the self-station are superposed on a video signal during the vertical blanking period of the video signal.

15. A transmission method for performing transmission between a transmitter having an RF converter which generates a standard television signal, and a receiver having an RF tuner which receives the standard television signal, wherein:

in advance of use, frequencies which can be used for video

transmission are detected within the reception band of the RF tuner;

the detected frequencies are registered, as a communication frequency list, in both of the transmitter and the receiver; and

the power spectrum is spread by changing the frequency within the range of the communication frequency list, thereby performing spread spectrum communication.

16. A transmission method as described in Claim 15, wherein the transmission power during the communication is automatically changed in accordance with the use frequency band width so as to keep the power density per unit band width constant.

17. A transmission method as described in Claim 15 ~~or 16,~~ wherein the frequency during the communication is changed in synchronization with the synchronous timing of the video signal.

18. A transmission method as described in ~~any of~~ Claims 15 ~~to 17~~ wherein, during the communication, a control signal is transmitted by superposing it on the video signal in the blanking period.

19. A transmission method as described in ~~any of~~ Claims 15 ~~to 18~~ wherein, during the communication, an audio signal is subjected to PCM, and the PCM audio signal is transmitted by superposing it

on the video signal in the blanking period.

20. A transmission method, wherein:

each of first and second transmission/reception apparatuses performs a transmission method described in ~~any of~~ Claims 15 ~~to 19;~~

during the communication, the frequency changing order is controlled in such a manner that the frequency is changed in one direction, from the higher frequency to the lower frequency or from the lower frequency to the higher frequency, within the range of the communication frequency list, and when the frequency reaches the end of the frequency list, it is returned to the beginning of the frequency list; and

the first and second transmission/reception apparatuses are controlled to realize duplex communication, by using a frequency time table in which the first and second transmission/reception apparatuses always use different frequencies.

21. A transmission method as described in Claim 20, wherein the previously registered communication frequency list is used when stating the communication and, after the communication has been started, a second communication frequency list obtained by duplicating the communication frequency list is used, and the second communication frequency list is updated as desired by exchanging the result of communication, i.e., whether it is good

or bad, between the first and second transmission/reception apparatuses.

22. A transmission method as described in ~~any of~~ Claims 15 ~~to 21~~, wherein:

an identification number (hereinafter referred to as an ID) given to the transmission apparatus during manufacture is stored; and

in advance of use, mutual inquiry of IDs is performed with another transmission apparatus which is permitted to have communication, and the ID is registered.

23. A transmission method as described in Claim 22, wherein:

the reception mode is always performed in advance of the transmission mode to detect the frequency time tables of all other transmission apparatuses which are performing transmission within the same wave area, and transmission is performed by using a frequency time table the use frequency of which is always different from those of these other transmission apparatuses; and

when a transmission signal from another apparatus which has requested communication cannot be detected even when a predetermined period of time has passed after starting the transmission mode, retransmission is performed by using a frequency time table different from said frequency time table.

24. A transmission method as described in Claim 22 ~~or 23~~ wherein, when the ID which is permitted to have communication cannot be confirmed in the reception mode, the original information such as audio or video is not output.